

UNITED STATES OF AMERICA
Before the
Federal Energy Regulatory Commission
Washington, D.C. 20426

In the matter of

Electricity Market Design	)	Docket Nos. RM01-12-000, RT01-2-000,
and Structure	)	RT01-10-000, RT01-15-000, ER02-323-000,
(RTO Cost Benefit Analysis Report)	)	RT01-34-000, RT01-35-000, RT01-67-000,
	)	RT01-74-000, RT01-75-000, RT01-77-000,
	)	RT01-85-000, RT01-86-000, RT01-87-000,
	)	RT01-88-000, RT01-94-000, RT01-95-000,
	)	RT01-98-000, RT01-99-000, RT01-100-000,
	)	RT01-101-000, EC01-146-000,
	)	ER01-3000-000, RT02-1-000, EL02-9-000,
	)	EC01-156-000, ER01-3154-000, and
	)	EL01-80-000.

COMMENTS OF THE TENNESSEE REGULATORY AUTHORITY

INTRODUCTION AND SUMMARY

The Tennessee Regulatory Authority (TRA or Authority) submits these comments with the Federal Energy Regulatory Commission (FERC or Commission) in response to the Public Notice released on March 1, 2002, Subject: Notice of Regional Teleconferences and due Dates for Comments and Reply Comments. The Authority applauds the FERC for its work on RTO formation and the inclusion of state public service commissions in the debates aiming at reaching an optimum RTO size in the Southeast.

The Commission decided “[to] perform additional cost-benefit analyses on RTOs to guide our further efforts. These analyses are intended to demonstrate whether and, if so, how RTOs will yield customer savings and to provide a quantitative basis for the appropriate number of RTOs.”¹

The Commission chose ICF Consulting to perform the RTO Cost-Benefit study. During its regular open meeting on February 27, 2002, the Commission issued an RTO Cost Benefit Report entitled “Economic Assessment of RTO Policy.” The report, prepared by ICF Consulting, is the result of a study commissioned by FERC to examine potential economic costs and benefits of a move toward Regional Transmission Organizations (RTOs).

¹/ Order Providing Guidance on Continued Processing of RTO Filings, Docket No. RM01-12-000, p. 5. (Issued November 7, 2001).

BACKGROUND

The FERC issued Order No. 2000² to promote the formation of RTOs; to promote efficiency and reliability in the operation and planning of the electric transmission grid; and to ensure non-discrimination in the provision of electric transmission services.

The Commission concluded that properly structured RTOs throughout the United States could provide significant benefits in the operation of the transmission grid by effectively removing existing impediments to competition in the power markets.

The Commission determined that the benefits from RTOs will include: (1) improved efficiencies in the management of the transmission grid; (2) improved grid reliability; (3) removal of opportunities for discriminatory transmission practices; (4) improved market performance; and (5) facilitation of lighter-handed government regulation.³ All of these will help improve power market performance, which will ultimately result in lower prices to the Nation's electricity consumers.⁴

In the study performed for the Commission, ICF Consulting used assumptions from previous analyses and available data to evaluate RTO policy scenarios and perform sensitivity analysis on the size of RTOs. The study considers the following cases: (1) Base Case which "represents current estimates of underlying market conditions and regulatory policy under Order No. 888, including market inefficiencies that exist within and across regions;"⁵ (2) RTO Policy Case which assumes efficiency improvements in generation and divides the nation into 4 RTOs plus ERCOT; (3) Transmission Only Case which divides the nation into 4 RTOs and ERCOT but does not include efficiency improvements in generation; (4) Demand Response Case which includes all the changes in the RTO Policy Case and the Transmission Only Case and a reduction in regional peak generation requirements by 3.5% beginning in 2004; and (5) Sensitivity Analysis: Larger RTOs Case (2 RTOs plus ERCOT) and Smaller RTOs Case (9RTOs plus ERCOT).⁶

The study concludes that, based on the percent savings from the Base Case, the Demand Response Case would produce more cost savings than the RTO Policy Case, which in turn will produce more cost savings than the Transmission Only Case.

In general, many of the RTO benefits mentioned in this study, especially generation efficiencies and benefits due to demand response programs, may be achieved due to the natural development of the energy system, absent any RTO formation.

^{2/} See Regional Transmission Organizations, Order No. 2000. (Dec. 20, 1999) (Codified at 18 C.F.R. Part 35).

^{3/} FERC Stats. & Regs. ¶ 32,541 at 33,716-20.

^{4/} Order No. 2000, Slip op. at 90.

^{5/} Economic Assessment of RTO Policy, p. 29. A total of 32 U.S. regions were modeled in this case.

^{6/} Economic Assessment of RTO Policy, p. 31 and p. 37.

DISCUSSION

1. General and Regional Assumptions

This study used many unsupported assumptions. Regional assumptions were not included in the study. The Commission and ICF Consulting agreed to make those assumptions available for state commissions. At this writing, the requested assumptions have not been made available at the exception of the Northeast region.

In order to make sufficient findings about any cost-benefit analysis, one must not only have information on assumptions and final results, but also on inputs and on how inputs are affected by different assumptions throughout the study. Absent such information, the reviewer of the study cannot perform sensitivity analyses or examine other configurations of scenarios that are necessary to draw objective conclusions.

The Commission should consider sharing the model, assumptions and data for this RTO cost-benefit analysis with state commissions to allow a better review of the results of the study. Specifically, the TRA is interested in the Tennessee and Southeast electricity market details and assumptions considered in this study.

2. The study is founded on many unsupported assumptions

Although the question of unsupported assumptions was raised and discussed during the federal-state panels, additional support for our concerns appears below. Most input assumptions and their rationale as well as outputs of the study were not made available when the Commission made public the Economic Assessment of RTO Policy. In order to evaluate many assumptions in the study and better understand the results of the report, the TRA would also need detailed output for all years for TVA and the Southeast region and explanations on the following inputs and assumptions used in the study:

- The study assumes a discount rate of 6.97%. It is not clear, however, how this discount rate was chosen.
- The assumption made in the Transmission Only Case that there are no competitive incentives for energy market improvements does not mirror actual developments in the power markets and should be modified.
- In the Base Case, hurdle rates were assumed to decline at 2.5% per year until leveling off in 2010. In the policy scenarios, hurdle rates within RTOs are assumed to decline to 0% for 2004 and onward to reflect improvements to the management of the transmission grid.
- In all Cases, it is assumed that hurdle rates between RTOs converged from the hurdle rates used in the Base Case to \$2 per MWh by 2004 and remained at that level throughout the time horizon of the study.
- The study assumes that increased competition is likely to encourage generators to be efficient at the rate of 2.5% on annual basis for fossil units between 2004 and 2010, and by decreasing the full load heat rate of fossil-fired units by 1% per year between 2004 and 2010. Both assumptions are held constant thereafter.

- For efficiency improvements, the study assumes that fossil-fired units' heat rates improve by 6% by 2010 and availability increases by 2.5% in the RTO Policy Case and the Sensitivity Cases.
- In the Base Case, projected national generating capacity growth was assumed to be 2.15% from 2005 to 2020. The Annual Energy Outlook 2002 (AEO 2002)⁷ assumed 1.83% annual growth in national generating capacity for the same period. In addition, the projections by plant type were assumed to increase by 2.3% a year while AEO 2002 assumed a 1.7% yearly increase for the same period. It is not clear why these assumptions in this study diverge from the projections of the Department of Energy.
- The Base Case includes an assumed annual average demand growth rate of 2.3%, while the AEO 2002 reference case assume average annual demand will grow at 1.8 percent. DRI-WEFA assumes 1.5% and GRI assumes 2.3%.⁸
- In order for the results to be comparable with the Base Case, the RTO Policy Case and the Transmission Only Case, sensitivity cases should be based originally on identical assumptions with study cases. Eventually, changes in input assumptions may be included in the sensitivity cases to evaluate alternative RTO configurations.
- The study ignores short-term price volatility. ICF assumed that "severe price volatility as a result of poor transmission management will generally be a transient effect that will not be forecast using a model like IPM."⁹ The study also does not assess the potential for market power abuse. It does not include potential environmental impacts of the RTO policy. Recent experiences in California have shown that severe short-term price volatility, when combined with other market inefficiencies, may degenerate into severe medium or long-term problems that should not be overlooked.
- The study assumes that there will be no transmission charges within RTOs. This assumption is misleading as transmission charges within RTOs will exist for some time to cover the cost of delivered electricity.

The TRA believes that all assumptions used in the RTO cost-benefit study should be made public for state regulators. The Commission should authorize ICF to incorporate modified assumptions into the study and to perform additional runs of the IPM model.

3. This RTO cost-benefit study is a study of the benefits of electricity competition

The report states: "a key finding is that the net benefits of RTO policy will depend on the effective and timely implementation of competitive electric power markets, and on minimizing delays and excessive startup costs." Further, the study claims that "the size of RTOs does matter but less than the dominant impact of enhanced incentives for efficient market outcomes."¹⁰

This is clearly a study of the benefits of electricity competition. Rather than "demonstrate whether and, if so, how RTOs will yield customer savings and to provide a quantitative basis for

^{7/} Energy Information Administration, Annual Energy Outlook 2002 with Projections to 2020. DOE/EIA-0383(2002). Washington, D.C.

^{8/} Id., See p. 103 AEO 2002.

^{9/} Economic Assessment of RTO Policy, p. 49.

^{10/} Economic Assessment of RTO Policy, p. vi.

the appropriate number of RTOs,” it is set up to test the hypothesis that RTOs will improve the efficiency benefits of electricity competition.

The study assumes that all states covered by an RTO will have electricity competition. It ignores the fact that many states are not considering electric restructuring in the near future. Thus, it assumes that there will be a uniform state siting policy since it ignores the complicated state siting process. In reality, a number of federal, state, and local agencies are involved in the transmission siting process. It is unclear whether the Commission is trying to mandate competition in the Transmission and Distribution segments of the industry.

4. The Net Present Value in the study is not NPV after all.

By definition, a net present value of a project is the sum of discounted net cash flow from the project and the (usually negative) initial cash flow. During the federal-state panel discussions, we learned that the net present value in the study did not include start up costs. In addition, since many costs were left out of the study, especially operating costs, inter-RTO charges, and transmission costs, the relevancy of the NPV as a decision criterion is easily challenged.

If start-up costs, operating costs, purchased power costs, and administrative and general allocation costs are assumed identical for RTO formation in all cases, then they can be ignored in the calculation of the net present value (NPV). Making such assumption can be misleading. If those costs are significantly different -- as they may be--, then omitting them will produce incorrect NPVs. Such flawed NPVs should not be relied upon to make a decision.

5. It is a mistake not to consider sunk capital costs in the RTO cost benefit analysis.

In theory, sunk capital costs are past and irreversible. They are bygones that cannot be affected by the decision to accept or reject an RTO scenario and should be ignored. In practice, however, sunk capital costs in electricity constitute part of electric utility stranded costs for which state commissions as well as the FERC have authorized recovery from customers in states which have moved to retail competition. Because regulated states will not be authorizing such recovery in the Base Case while the RTO Policy Case and the Sensitivity Cases assume competitive markets and recovery of stranded costs, excluding such costs in the RTO cost benefit analysis shows that this study does not model what is likely to happen in the real world.

The Commission should request ICF Consulting to review the assumption on sunk capital costs so that both the cost and revenue effects on RTOs can be determined.

6. Additional sensitivity analysis is needed

The objective of a cost-benefit analysis is to choose the most beneficial project among competing alternatives (under similar conditions or varying conditions). This study does not consider all feasible alternatives. The study is built on pre-conceived ideas (that the existing power system has inefficiencies, but that existing ISOs do not have inefficiencies), rather than exploring possible or feasible alternatives.

The sensitivity analysis presented in this RTO cost benefit analysis emphasizes only the number of RTOs. The study did not address changes in a number of other assumptions. Because the study has many omitted costs and revenues, it would make more sense to do sensitivity analysis on forecasted inputs, sales, and costs. Cash flows are a function of revenues, costs, depreciation and tax rates. If any one of these factors turns out to be worse than the forecasted values, the final results of the cost benefit study would be greatly affected.

The Commission should ask ICF Consulting to perform additional sensitivity analyses based on changes in inputs rather than in the number of RTOs.

7. The study assumes that transmission capacity expansion will increase only by 5% at no extra costs and that capacities between RTOs are unchanged.

Existing research on transmission capacity supports a change in this assumption. Data show that transmission investments (in constant, inflation-adjusted 1999 dollars) have been declining for a quarter century at an average rate of almost \$120 million a year.¹¹

The NERC data and projections show a very small increase in planned transmission capacity between 1999 and 2009, from 137,300 to 143,500 GW-miles (or an increase of 4.7%).¹²

According to a recent study, "[m]aintaining a normalized capacity of 201 MW-miles/MW demand throughout the decade [1999-2009] requires construction of 26,600 GW-miles, compared with the planned construction of only 6,200 GW-miles."¹³

Assuming that 2 percent of the transmission capacity is retired each year, "U.S. utilities plan to build 33,700 GW-miles of transmission between 2000 and 2010 (27,500 GW-miles to replace retired assets plus 6,200 GW-miles of new capacity). At a cost of \$1.0 million/GW-mile, the nation's planned investment in transmission capacity during the current decade is \$35 billion. To maintain transmission capacity at its current value relative to summer peak demand would require utilities to construct 54,000 GW-miles (27,500 GW-miles to replace retired assets plus 26,600 GW-miles of new capacity) during this decade. The cost of this investment would be \$56 billion, about 60 percent higher than that for the base case and equal to the book value of existing U.S. transmission facilities."¹⁴

¹¹/ Hirst, E. and Kirby, B. June 2001. Transmission Planning for a Restructuring U.S. Electricity Industry. Edison Electric Institute, Washington, D.C., page 5.

¹²/ Id. page 8.

¹³/ Id. page 8.

¹⁴/ Id. pp. 9-10.

Because of potential benefits of RTOs, it is possible that under a pessimistic assumption of a one time 5 percent increase in transmission facilities, operating costs under the base case and RTO policy options may not be very different. Assuming that some transmission facilities will be retired and new transmission facilities will be built, however, it is unrealistic to assume that transmission and transmission operating costs will be invariant in all study cases. In fact, with new and upgraded transmission, low cost generators will expand their market opportunities and high cost generators will reduce their market opportunities. Therefore, new transmission and upgraded transmission will be costly, but at the same time there will be market benefits associated with them. Neither transmission costs nor benefits should be ignored in an RTO cost-benefit study.

8. Regional distribution of costs and benefits of RTOs.

The study assumes that if most transmission is under the authority of an RTO, the benefits and the costs will be uniformly distributed across regions. In its conclusion, the study states that “[m]ore detailed regional analyses could trace the revenue flows and begin to consider distributional questions that fall more properly into other policy contexts. Such detailed regional analyses could also consider the impact of market and regulatory uncertainties on local economic outcomes, and bring a finer degree of resolution to specific transmission flow and network characteristics.”¹⁵

State commissions are being asked to support regional transmission organizations without the Commission showing that such organizations will bring benefits to all consumers. Many inputs, costs, and revenues have been left out. In addition, the results of the study show that the potential benefits of RTOs are not high. It would be very helpful to states and electric utilities if a distributional analysis of the benefits was provided. A valuation of costs and benefits accruing to electric firms in different states was not performed to allow such analysis.

RTO cost-benefit analysis should not assume that RTOs would promote competition and improve the functioning of markets. The study should show how RTOs would lead to improved efficiencies and higher benefits to consumers. The study should show how RTOs would lead to a more efficient regional distribution of costs and benefits.

The study does not distinguish between states that have deregulated their electricity market and those that have not. Allowing for firm heterogeneity will provide better results as firms in a competitive environment and firms in a regulated environment may have different behavior toward market variables (such as investment, profit, risk, etc.). Even in the Base Case, states move to retail competition and real time pricing at some time in the future. It is possible, therefore, that the results from the Base Case and the RTO Policy Case may converge. The Commission should order ICF to modify the study assumptions in order to allow for this important distinction.

^{15/} Economic Assessment of RTO Policy, p. 81.

9. The study fails to address RTO organizational form

The study does not consider the different forms of RTOs available in the literature and that the Commission supported in Order No. 2000: a for-profit, a not-for-profit, or a hybrid RTO form. A good RTO cost-benefit analysis should address the costs and benefits of the different forms of RTO organization relative to other transmission organization forms. Because other forms of transmission organization are not represented in the study, it is implicitly assumed that the RTO form of organization is superior to any alternative form.

The Commission should support its position in Order No. 2000 on the different forms of RTOs and order ICF to include different forms of transmission organization in the RTO cost-benefit study.

10. The benefits of Demand Response Programs

This study assumes a 3.5% reduction in peak demand by year 2006. This assumption was made for the Demand Response Case only. In the real world, demand response programs are being implemented and will be implemented in the absence of retail competition or RTOs.

In this study, the Demand Response Case yields higher savings (\$19.1 billion in terms of NPV 2002-2021) than the RTO Policy Case. This is no surprise as the result was expected from this assumption.

The assumption of a 3.5% reduction in peak demand beginning in year 2006 should be modified to reflect the dynamics of demand response programs in place in many states. Although many studies report percentage reduction in peak demand in regions where demand response programs are implemented, it will most likely take time before achieving a national average reduction in peak demand of 3.5%. In addition, there is no reason to assume that a reduction in peak demand will begin in year 2006 since demand response programs exist today. A more variable rate (lower rate during the first years and higher during the last years of the study) would be more reasonable and should be used in all RTO scenarios.

The Commission should order ICF Consulting to perform additional runs of the model and include Demand Response assumptions in all RTO cases.

11. The treatment of contracts and native load commitments.

According to ICF, “contracts and native load commitments may not be responsive to changes in regulatory policy. The consumers will not experience the potential benefits (or costs) of policy changes as much or as quickly as they would in a more responsive transactional environment. This ‘dampening’ effect of contracts and native load treatment is not directly represented in the analysis, but is a factor to be kept in mind when interpreting results.”¹⁶

Because the RTO cost-benefit study is based on many assumptions that do not mirror the development of electricity markets today, it assumes competitive markets throughout the country

^{16/} Economic Assessment of RTO Policy, p. 81.

and ignores the dampening effects of contracts and native loads. Even if electricity markets were to become 100% competitive, this would take time. Thus, the study should have included more realistic assumptions on contracts, native loads, state retail choice, transmission charges within RTOs, etc.

12. The results of the study may not be conclusive.

The RTO Policy Case and the Sensitivity Cases show that System Level Annualized production costs are almost identical whether in a 3-RTO model or a 5-RTO model.

For the period 2002-2021, the NPV of the RTO Policy Case savings from Base Case is \$40.9 billion; \$41.4 billion for the larger RTOs scenario; and \$40.2 billion in the smaller RTOs scenario. The difference between these three cost savings may not be statistically different from zero. Therefore, it is not clear whether any particular number of RTOs is optimal. Faced with such a possibility, ICF Consulting should have performed additional sensitivity analysis based on alternative input assumptions rather than the change in the number of RTOs.

The Commission should order additional sensitivity analysis and statistical tests of the difference between cost savings and prices produced by different scenarios.

13. Price and Revenue Effects, Consumer Surplus

The TRA analyzed the effects of the different scenarios on the electricity price in the TVA area. For the years 2004, 2006, 2010, 2015 and 2020, the overall price effect in the RTO Policy Case, the Demand Response Case, Small RTOs Case, and Large RTOs Case is a price decrease. The overall price effect in the Transmission Only Case is a price increase across the board. It is not possible, however, to tell which case will produce a more significant price decline in the absence of forecasted demand.

Even though the overall effect of RTOs is a decrease in production costs, this RTO cost-benefit study does not produce projected demand and revenues. Thus, it is impossible to estimate consumer and producer surpluses (or losses) due to the adoption of RTOs.

State Commissions should be provided tables showing a regional break-down of the cost savings as well as projected demand and revenue. For Tennessee, this regional break-down should provide TVA cost savings, projected demand and revenue due to all RTO alternatives.

14. If RTOs are necessary, what is the number of RTOs that would most efficiently serve the Southeast?

The Commission intended to perform a cost-benefit study on RTOs in order to demonstrate whether and, if so, how RTOs will yield customer savings and to provide a quantitative basis for the appropriate number of RTOs. Even with the flaws found in this RTO cost-benefit analysis, the results of the study mandated by the Commission do not strongly support that RTOs will yield customer savings higher than the Base Case. They do not strongly support any particular number of RTOs in the country.

For the Southeast states, this question remains unanswered: Is one larger Southeastern RTO best, or would three (SeTrans, Grid-South, and Grid-Florida) or four (including TVA RTO) work just as well? The TRA believes that further investigation of this question is necessary. The Commission should order ICF Consulting to conduct further analysis and to provide Southeast states with results that can be used to determine the optimal number of RTOs in the region.

CONCLUSION

For each and all the foregoing reasons, the Authority respectfully suggests that the Commission: (1) order ICF Consulting to provide the TRA with all documentation requested for the state of Tennessee, TVA, and the Southeast regions; (2) order ICF Consulting to modify inputs and assumptions used in the RTO Cost-Benefit study as indicated above and perform additional runs of the IPM Model; and (3) direct the sponsors of the SeTrans RTO, GridSouth RTO, Grid Florida RTO, and TVA to conduct RTO cost-benefit studies for their respective territories.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "K. David Waddell". The signature is fluid and cursive, with a large initial "K" and "D".

K. David Waddell
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April 9, 2002